

*On the Rectification of the Hyperbola by Means of Two Ellipses ; proving that Method to be circuitous, and such as requires much more Calculation than is requisite by an appropriate Theorem : in which Process a new Theorem for the Rectification of that Curve is discovered.*

*To which are added some further Observations on the Rectification of the Hyperbola : among which the great Advantage of descending Series over ascending Series, in many cases, is clearly shown ; and several Methods are given for computing the constant Quantity by which those Series differ from each other. By the Rev. John Hellins, B.D. F.R.S. and Vicar of Potter's-Pury, in Northamptonshire. Being an Appendix to his former Paper on the Rectification of the Hyperbola, inserted in the Philosophical Transactions for the Year 1802. Communicated by Nevil Maskelyne, D.D. F.R.S. Astronomer Royal. Read January 10, 1811. [Phil. Trans. 1811, p. 110.]*

The present communication is designed by the author as an appendix to his former paper on the same subject, printed in our Transactions for 1802.

Although he acknowledges the ingenuity of Mr. John Landen, who devised the rectification of the hyperbola by means of two ellipses, and adds his tribute of applause to that which has been bestowed upon it by the most eminent mathematicians of the Continent, as well as of our own country, Mr. Hellins is nevertheless of opinion, that it is more to be admired as curious than practically useful ; since it is circuitous, and requires much more calculation than will be found requisite by the theorem, which is the primary subject of this paper.

Mr. Hellins also adds some further observations on the rectification of the hyperbola, and shows the great advantage of descending series over ascending series, in many cases, and gives several methods of computing the constant quantity by which those series differ from each other.

*On a Combination of Oxymuriatic Gas and Oxygen Gas. By Humphry Davy, Esq. LL.D. Sec. R.S. Prof. Chem. R.I. Read February 21, 1811. [Phil. Trans. 1811, p. 155.]*

The author, having observed the properties of oxymuriatic gas to be different in consequence of its being prepared in different modes, was endeavouring to determine the nature of these differences, and the causes on which they depend, when he discovered the very singular compound which is the subject of the present paper. For the formation of this compound, he pours a small quantity of dilute muriatic acid upon a large quantity of hyperoxymuriate of potash. A gas is then disengaged, which is capable of being absorbed by water, but may be collected over mercury. It is of a bright yellow colour, approaching to orange, and has nearly the specific gravity of oxymuriatic gas.

It often explodes while collecting, in consequence of heat gene-